NextGen Weather Drivers

- Weather accounts for
  - 70% of delays
  - 21% of accidents
- Demand will triple by 2025
- Demand exceeds capacity in weather
- Impacts both airborne and surface user
- New approaches are necessary to safely accommodate demand
  - Better weather information
  - NEO
  - Increased use of automated decision tools
  - Better use of better weather information

2025 NextGen Concept

Operating Principles

- "It's about the users…"
- System-wide transformation
- Prognostic approach to safety assessment
- Globally harmonized
- Environmentally compatible to enable continued growth

Key Capabilities

- Net-Enabled Information Access
- Performance-Based Services
- Weather-Assimilated Decision Making
- Layered, Adaptive Security
- Broad-Area Precision Navigation
- Trajectory-Based Aircraft Operations
- "Equivalent Visual" Operations
- "Super Density" Operations

NextGen Network Enabled Weather

- 4D Weather Data Cube
- System Wide Application
- Single Authoritative Source
- Increased Machine-to-Machine Operations
- Deterministic and Probabilistic information
- Increased user access to all relevant data
- Integration into user applications and decisions
- Achieve cost efficiencies for operations

Thrust 1 –Integration

- Major objectives
  - Consolidate weather information into decision support tools, automation systems, avionics
  - Incorporate probabilistic forecasts into ATM decisions
  - Measure impact of weather information on operations
  - Update weather regulations
  - Develop user training
- What will be delivered
  - Improved, probabilistic weather information tailored to support NextGen Decision Support Tools (DST)
- Benefits
  - Increased capacity for traffic reroutes, runway reconfigurations, gate assignments, metering and spacing

Thrust 2 - Dissemination

- Major objectives
  - Provide common and widely accessible weather data and impact information using Network Enabled Operations methods
  - Implement NEO network governance
  - Set standards for core services
  - Develop solutions for multi-agency information security & Quality Assurance
- What will be delivered
  - NEO weather architecture that facilitates access by all users to real-time and strategic weather information
- Benefits
  - FAA cost avoidance
  - Increased capacity

Thrust 3 - Forecasts

- Major objectives
  - Provide weather processing to support operations.
  - Develop consolidated product suites to support ATM decision making
  - Support development of the 4-D Weather Data Cube
  - Translate weather algorithms into NEO compatible formats
- What will be delivered
  - Improved deterministic and probabilistic forecasts of all aviation relevant weather phenomena
- Benefits
  - Longer planning horizon
  - Increased certainty and lead time for operational decision making

Thrust 4 - Observations

- Major objectives
  - Develop & optimize airborne sensors networks
  - Consolidate ground sensor networks
- What will be delivered
  - Right-sized aviation observation suite of real-time and strategic weather information
- Benefits
  - Cost efficiency
  - Improved tactical and strategic decisions
  - Increased hazard avoidance

NextGen Weather Concepts

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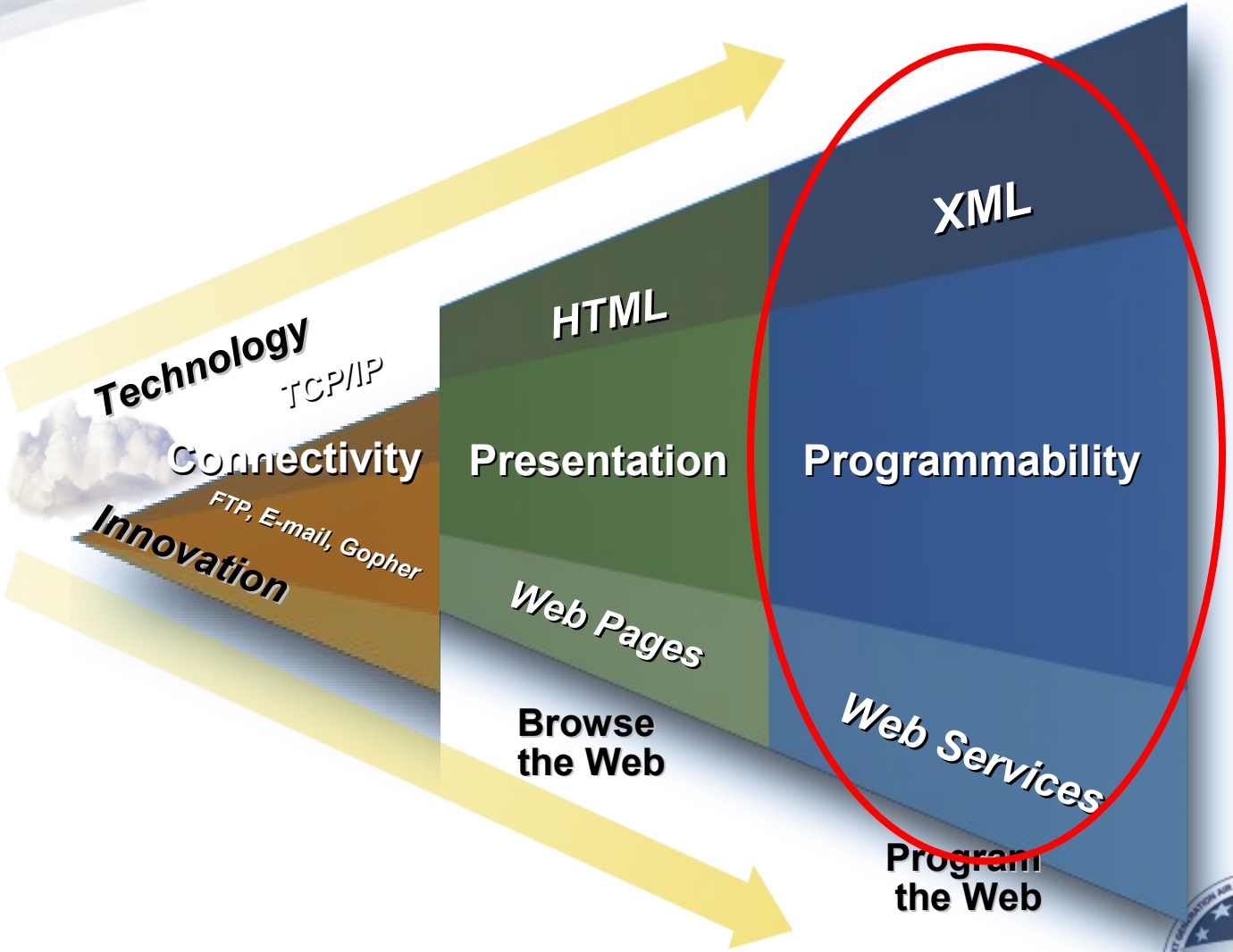
Feb 12th, 2008

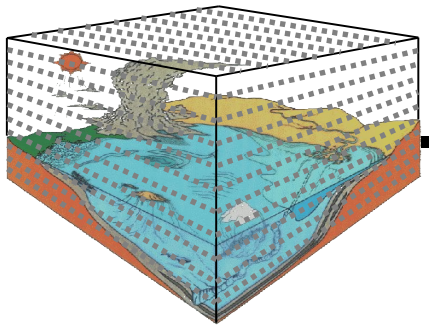
Network Services Evolution



XML and Web Services - Fundamental construct for Net-Centric applications

NNEW and the 4D Weather Data Cube

The Atmosphere



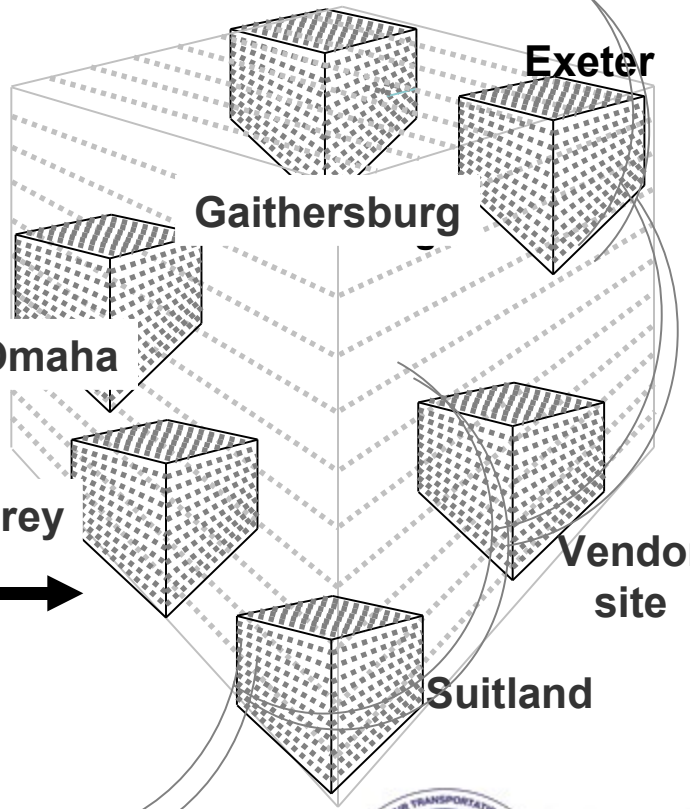
Sensors:

- Aircraft
- Radar
- Surface
- Raob
- Satellite

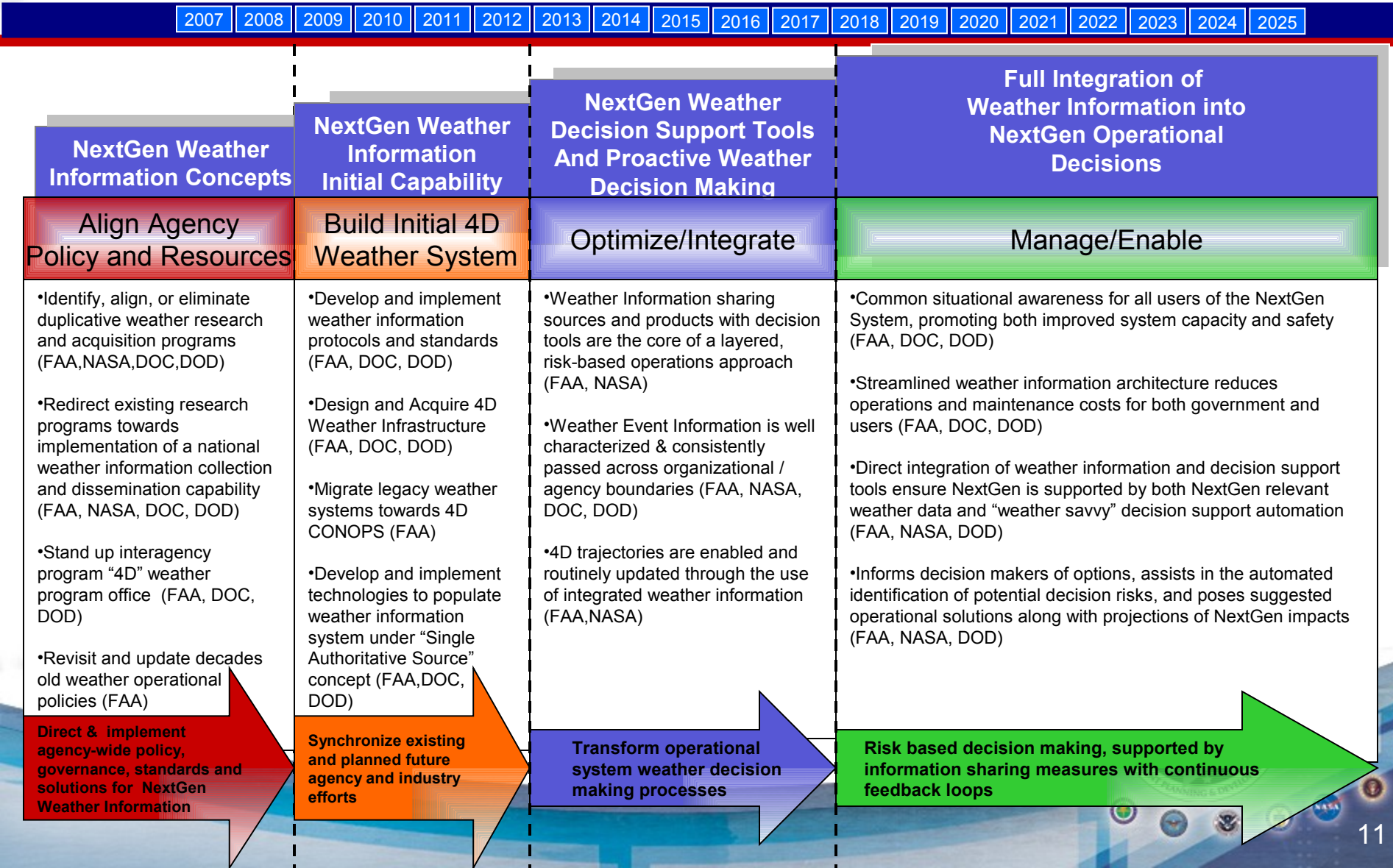
Forecast Engines:

- WRF
- GFS
- CoSPA
- FIP

4D Weather Data Cube



Draft Weather Integration "Roadmap"



Aviation Weather Office Functions

- Coordinate Nextgen weather strategic planning
- Document policy and requirements
- Conduct aviation weather research
- Develop new capabilities
- Complete test & evaluations
- Provide Legacy support & transition
- Define, evaluate and verify weather capability effectiveness

Aviation Weather Office Objectives

- Coordinate planning activities
- Define aviation weather requirements
- Clarify the value chain
- Achieve measurable benefits
- Determine acquisition strategy and policy
- Align aviation weather research, development and implementation
- Plan weather capability integration
- Develop Nextgen capabilities

Thoughts to Take Away

Because of the

dynamic nature of weather,
its impact on congested operations, and
the complexity of user decision making;

We must establish a weather information infrastructure and utilize decision tools and automation into which weather information is fully integrated